PART V

Functions and Pointers

Gopher Level
Intermediate

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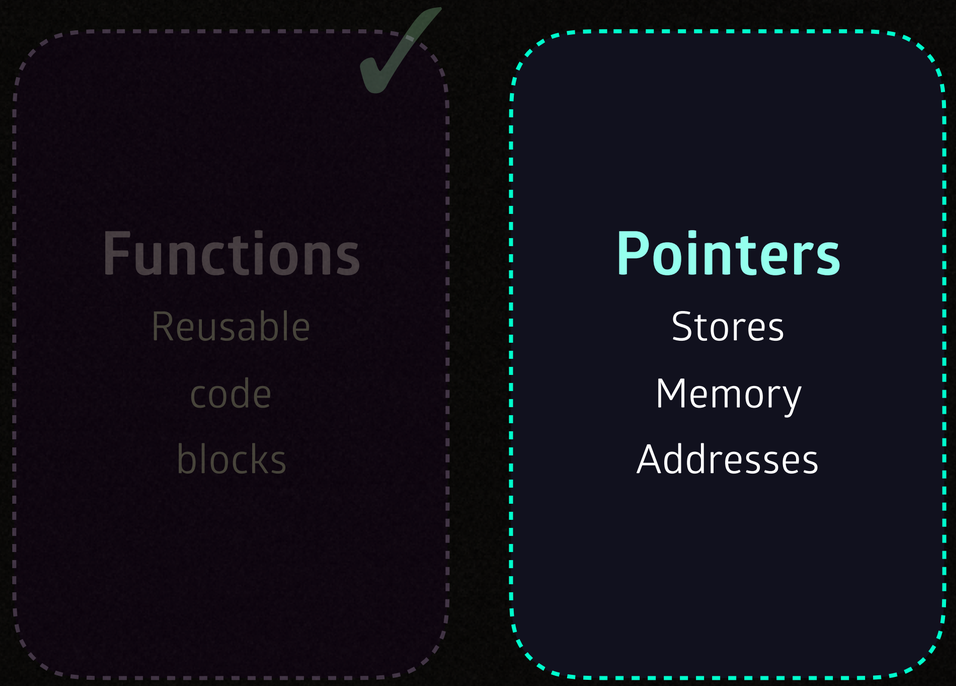
PART V

Functions and Pointers



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PART V

Functions and Pointers

🧙🏽‍♂️ Design a Program Using Pointers

Rewrite the Log Parser

⚙️ Pointer Semantics

Passing Pointers to

Structs, Maps and Slices to Funcs

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POINTERS

A pointer stores the memory address of a value

— wants some 0xC0FFEE ☕?

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P ⟶ Short for: Pointer Variable

V ⟶ Short for: Variable

These variable names are not special !

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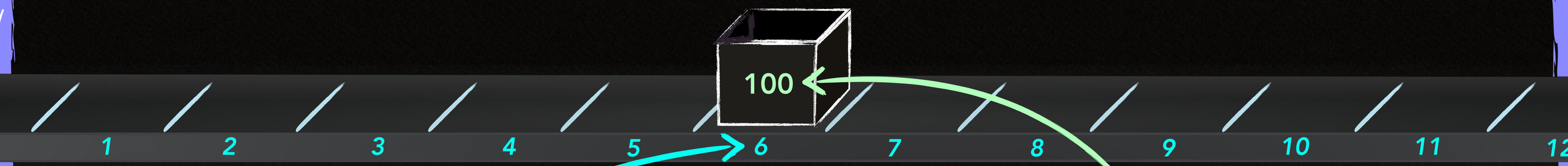
POINTERS

& finds the address — * finds the value — *Type denotes a pointer type

```
var counter byte = 100
```




```
P := &counter
```

```
V := *P
```

What is the type of P?

`*byte`

A pointer to a byte value

What is the type of V?

`byte`

A byte variable

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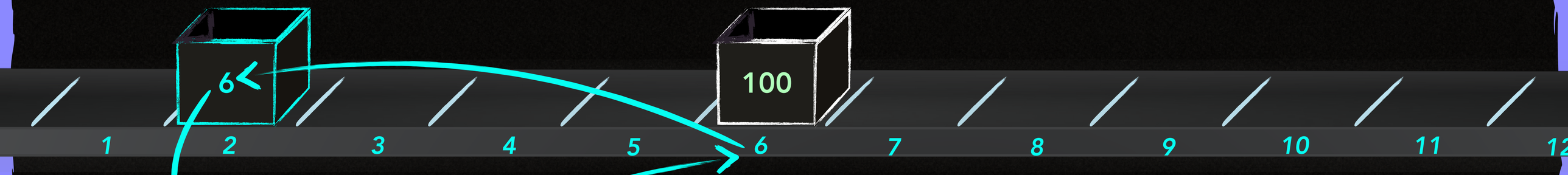
ADDRESS-OF OPERATOR

P is a byte pointer variable (**byte*) that points to a byte variable (*counter*)

```
var counter byte = 100
```




```
P := &counter
```

A pointer to a byte value

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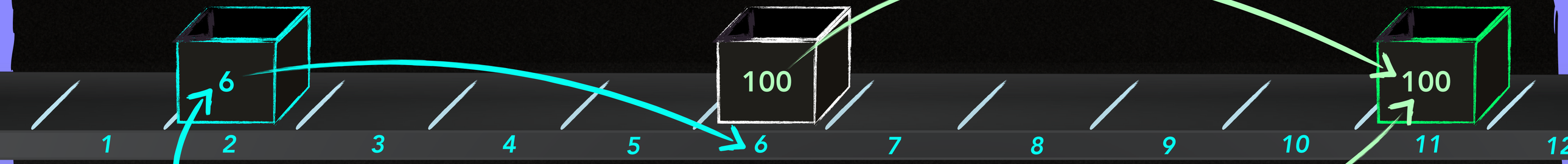
INDIRECTION OPERATOR

V stores a copy of the counter's value

```
var counter byte = 100
```




```
P := &counter
```

```
V := *P
```

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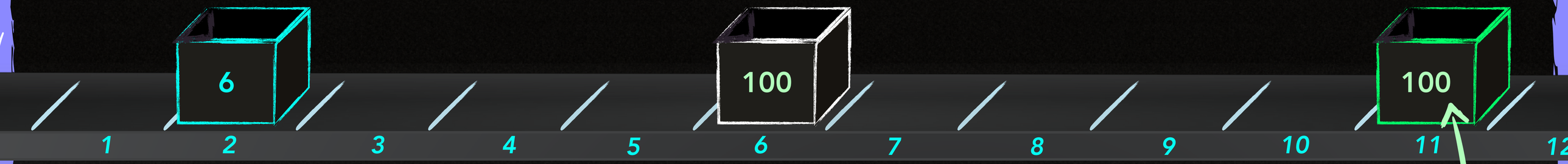
INDIRECTION OPERATOR

counter and V can change independently

```
var counter byte = 100
```




```
P := &counter
```

```
V := *P
```

```
V = 200
```

What is the type of V?

`byte`

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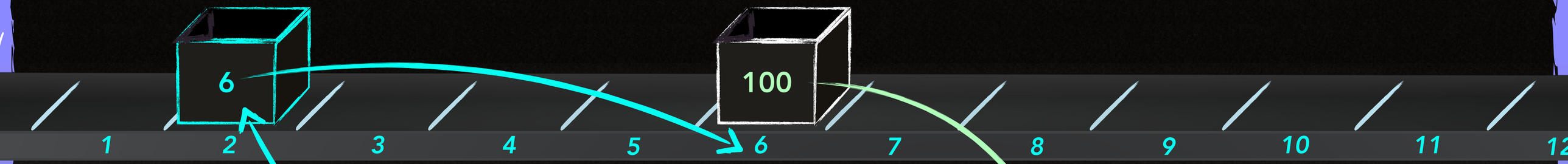
ALWAYS FRESH

*P indirectly returns the latest copy of the counter

```
var counter byte = 100
```




```
P := &counter
```

```
counter++
```

```
*P
```

101

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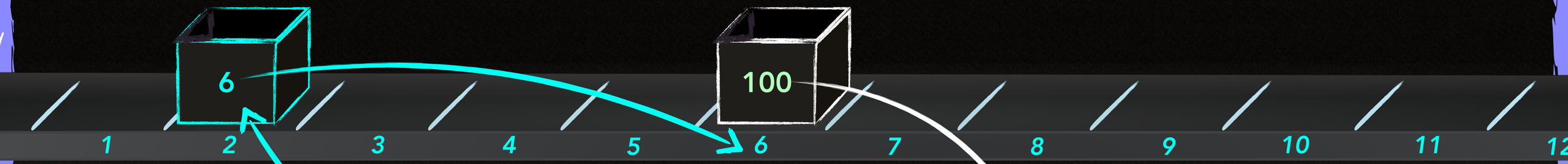
SPOOKY ACTION AT A DISTANCE

*P can indirectly update the value of the counter

```
var counter byte = 100
```




```
P := &counter
```

```
*P = 25
```

```
counter
```

25

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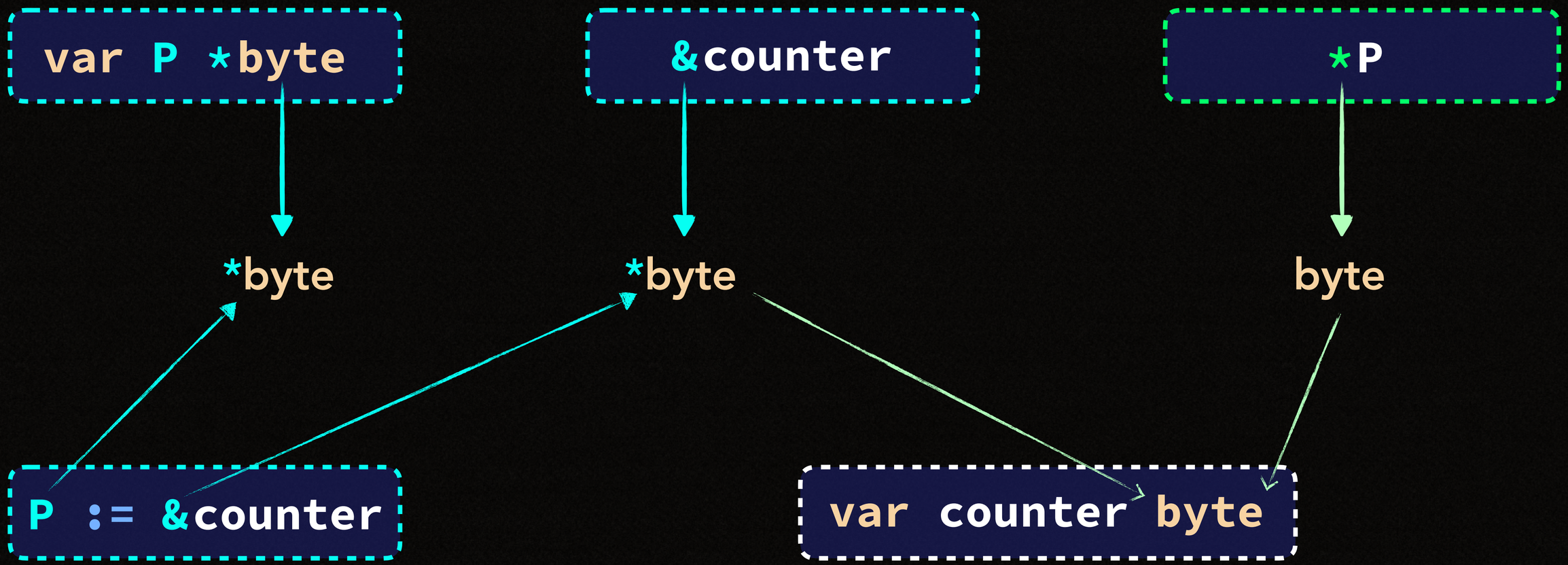
SUMMARY

*Type denotes a pointer type

& finds the address

* finds the value



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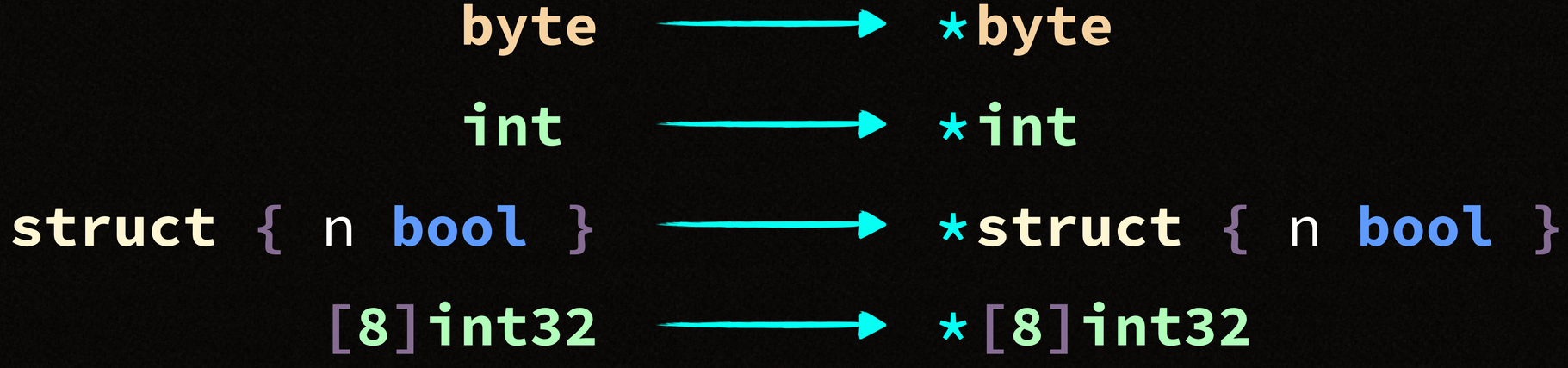
SUMMARY

There is a corresponding pointer type for every type



and so on...

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POINTERS — BASICS

A pointer stores the memory address of a value

— wants some 0xC0FFEE ☕?

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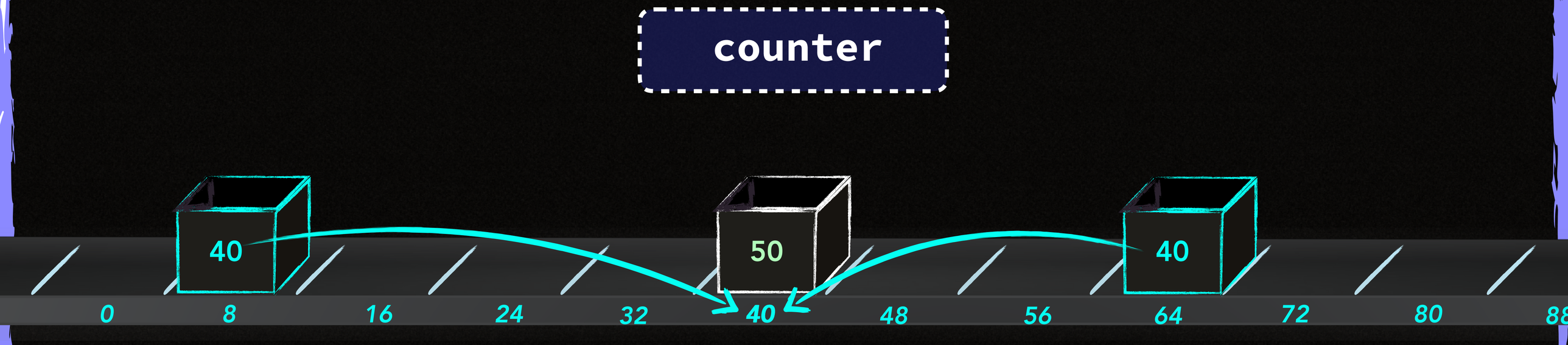
POINTERS ARE COPIED TOO

The function creates a new pointer variable that points to the same address




```
func passPtrVal(pn *int) {
  // pn := &counter
}
```

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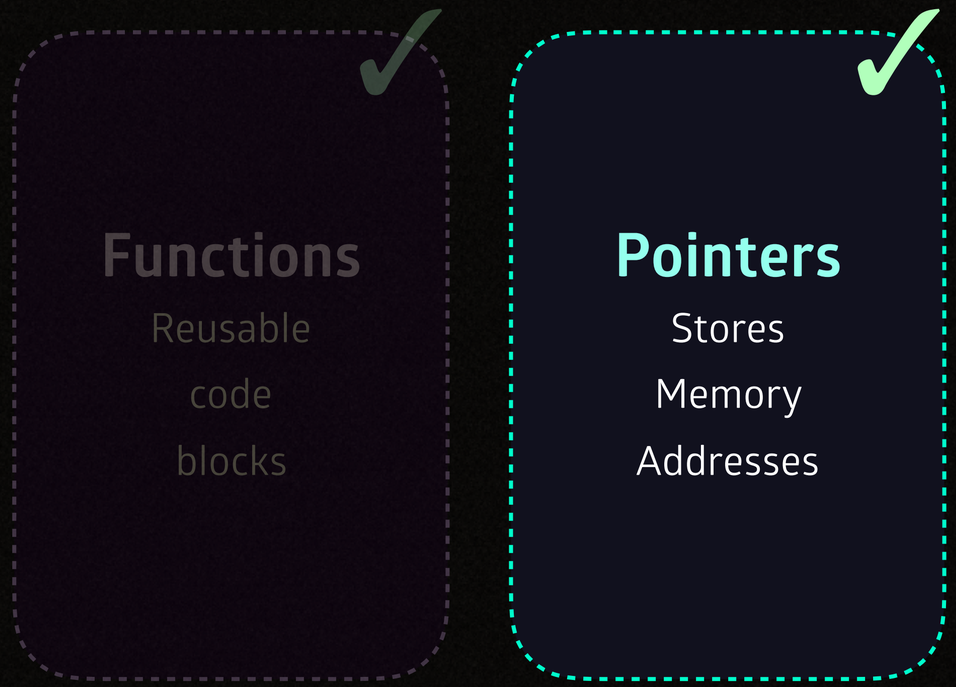
Functions and Pointers



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